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				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCLOSE	IRF	Filing Date	Herewith	
	TEMENT BY A			First Named Inventor	Elizabeth Ahra CHO	
SIA	LEWENTET	IPPLICAN	11 (1)	Art Unit	Not Yet Assigned	
	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned	
Sheet	4	of	20	Attorney Docket Number	15119.0002-01000	

		U.S.	PATENTS	
/P.A.G./	US-7724891	05-25-2010	Beaucoup, Franck	
/P.A.G./	US-7747001	06-29-2010	Kellermann, Walter	
/P.A.G./	US-7756278	07-13-2010	Moorer, James A.	
/P.A.G./	US-7831035	11-09-2010	Stokes, Jack W.	
/P.A.G./	US-7831036	11-09-2010	Beaucoup, Franck	
P.A.G./	US-7925006	04-12-2011	Hirai	
/P.A.G./	US-7925007	04-12-2011	Stokes	
/P.A.G./	US-7970123	06-28-2011	Beaucoup, Franck	
/P.A.G./	US-7970151-B2	06-28-2011	Oxford; William V.	
/P.A.G./	US-7991167	08-02-2011	Oxford, William V.	
/P.A.G./	US-7995768	08-09-2011	Miki, Akira	
/P.A.G./	US-8005238	08-23-2011	TASHEV, IVAN	
/P.A.G./	US-8019091	09-13-2011	Burnett, Gregory C.	
/P.A.G./	US-8085947	12-27-2011	Haulick	
/P.A.G./	US-8098842	01-17-2012	Florencio, Dinei	
/P.A.G./	US-8098844	01-17-2012	Elko, Gary W.	
/P.A.G./	US-8103030	01-24-2012	Barthel, Roland	
/P.A.G./	US-8130969	03-06-2012	Buck	
/P.A.G./	US-8130977	03-06-2012	Chu, Peter L.	
/P.A.G./	US-8135143	03-13-2012	Ishibashi, Toshiaki	
/P.A.G./	US-8175291	05-08-2012	Chan, Kwok-Leung	
/P.A.G./	US-8184801	05-22-2012	Hamalainen	
/P.A.G./	US-8189765	05-29-2012	Nishikawa	
/n n o /	US-8189810	05-29-2012	Wolff, Tobias	
/P.A.G./ /P.A.G./	US-8199927	06-12-2012	Raftery, Emmet	
/P.A.G./	US-8204198	06-19-2012	Adeney, Kathryn	
/P.A.G./	US-8213596	07-03-2012	Beaucoup, Franck	
/P.A.G./	US-8213634	07-03-2012	Daniel, Thomas Martin	
/P.A.G./	US-8219387	07-10-2012	Cutler, Ross	
/P.A.G./	US-8229134	07-24-2012	Duraiswami, Ramani	
P.A.G./	US-8233352	07-31-2012	Beaucoup, Franck	
P.A.G./	US-8249273	08-21-2012	Inoda, Takeshi	
P.A.G./	US-8275120	09-25-2012	Stokes, III, Jack W.	
/P.A.G./	US-8284949	10-09-2012	Farhang	
/P.A.G./	US-8286749	10-16-2012	Stewart, Jr. et al.	

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCI OSI	IRF	Filing Date	Herewith	
STATEMENT BY APPLICANT (1)				First Named Inventor	Elizabeth Ahra CHO	
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	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned	
Sheet	5	of	20	Attorney Docket Number	15119.0002-01000	

		U.S.	PATENTS	
/P.A.G./	US-8290142	10-16-2012	Lambert, David K.	
/P.A.G./	US-8297402	10-30-2012	Stewart et al.	
/P.A.G./	US-8331582	12-11-2012	Steele, Brenton Robert	
/P.A.G./	US-8385557	02-26-2013	Tashev	
/P.A.G./	US-8395653	03-12-2013	Feng, Jinwei	
/P.A.G./	US-8403107	03-26-2013	Stewart, Jr. et al.	
/P.A.G./	US-8433061	04-30-2013	Cutler, Ross	
/P.A.G./	US-8437490	05-07-2013	Marton, Trygve Frederik	
/P.A.G./	US-8443930	05-21-2013	Stewart, Jr., William Cameron	
/P.A.G./	US-8447590	05-21-2013	Ishibashi, Toshiaki	
/P.A.G./	US-8479871	07-09-2013	Stewart et al.	
/P.A.G./	US-8483398	07-09-2013	Fozunbal	
/P.A.G./	US-8498423	07-30-2013	Thaden, Rainer	
/P.A.G./	US-8503653	08-06-2013	Ahuja, Sudhir Raman	
/P.A.G./	US-8515089	08-20-2013	Nicholson, Guy C.	
/P.A.G./	US-8553904	10-08-2013	Said, Amir	
/P.A.G./	US-8583481	11-12-2013	Viveiros, Walter	
/P.A.G./	US-8600443	12-03-2013	Kawaguchi, Hiroshi	
/P.A.G./	US-8605890	12-10-2013	Zhang	
/P.A.G./	US-8631897	01-21-2014	Stewart, Jr. et al.	
/P.A.G./	US-8638951	01-28-2014	Zurek, Robert	
/P.A.G./	US-8644477	02-04-2014	Gilbert, Mark W.	
/P.A.G./	US-8654990	02-18-2014	Faller, Christof	
/P.A.G./	US-8660274	02-25-2014	Wolff, Tobias	
/P.A.G./	US-8660275	02-25-2014	Buck, Markus	
P.A.G /	US-8672087	03-18-2014	Stewart, Jr. et al.	
P.A.G /	US-8676728	03-18-2014	Velusamy, Kavitha	
P.A.G./	US-8744069	06-03-2014	Cutler, Ross	
/P.A.G./	US-8811601	08-19-2014	Mohammad, Asif I.	
/P.A.G./	US-8818002	08-26-2014	Tashev, Ivan	
/P.A.G./	US-8842851	09-23-2014	Beaucoup, Franck	
/P.A.G./	US-8855326	10-07-2014	Derkx, Rene Martinus Maria	
/P.A.G./	US-8855327	10-07-2014	Tanaka, Ryo	
/P.A.G./	US-8873789	10-28-2014	Bigeh, Fred	
/P.A.G./	US-8886343	11-11-2014	Ishibashi, Toshiaki	

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCLOSI	IRF	Filing Date	Herewith	
STATEMENT BY APPLICANT (1)				First Named Inventor	Elizabeth Ahra CHO	
SIA	I E IVIE IVI DI A	APPLICAN	11 (1)	Art Unit	Not Yet Assigned	
	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned	
Sheet	6	of	20	Attorney Docket Number	15119.0002-01000	

		U.S.	PATENTS	
/P.A.G./	US-8893849	11-25-2014	Hudson, Michael	
/P.A.G./	US-8903106	12-02-2014	Meyer, Jens M.	
/P.A.G./	US-8942382	01-27-2015	Elko, Gary W.	
/P.A.G./	US-9002028	04-07-2015	Haulick, Tim	
/P.A.G./	US-9094496	07-28-2015	Teutsch	
/P.A.G./	US-9113247	08-18-2015	Chatlani, Navin	
/P.A.G./	US-9126827	09-08-2015	Hsieh et al.	
/P.A.G./	US-9129223	09-08-2015	Velusamy, Kavitha	
/P.A.G./	US-9172345	10-27-2015	Kok, Hui Siew	
/P.A.G./	US-9215327	12-15-2015	Bathurst	
/P.A.G./	US-9215543	12-15-2015	Sun	
/P.A.G./	US-9226088	12-29-2015	Pandey et al.	
/P.A.G./	US-9237391	01-12-2016	Benesty, Jacob	
/P.A.G./	US-9247367	01-26-2016	Nobile, Matthew A.	
P.A.G./	US-9253567	02-02-2016	Morcelli, Alessandro	
/P.A.G./	US-9264553	02-16-2016	Pandey, Ashutosh	
/P.A.G./	US-9294839	03-22-2016	Lambert, David K.	
/P.A.G./	US-9301049	03-29-2016	Elko, Gary W.	
/P.A.G./	US-9319532	04-19-2016	Bao	
/P.A.G./	US-9319799	04-19-2016	Salmon et al.	
/P.A.G./	US-9326060	04-26-2016	Nicholson. Guy C.	
/P.A.G./	US-9338549	05-10-2016	Haulick, Tim	
/P.A.G./	US-9357080	05-31-2016	Beaucoup	
/P.A.G./	US-9403670	08-02-2016	Schelling et al.	
/P.A.G./	US-9462378	10-04-2016	Kuech, Fabian	
/P.A.G./	US-9479627	10-25-2016	Rung, Martin	
/P.A.G./	US-9479885	10-25-2016	Ivanov, Plamen A.	
/P.A.G./	US-9489948	11-08-2016	Chu, Wai C.	
/P A G /	US-9510090	11-29-2016	Lissek, Herve	
/P.A.G./	US-9516412	12-06-2016	Shigenaga, Shinichi	
/P.A.G./	US-9560451	01-31-2017	Eichfeld, Jahn Dmitri	
/P.A.G./	US-9565493	02-07-2017	Abraham, Mathew T.	
/P.A.G./	US-9578413	02-21-2017	Sawa, Hirotaka	
/P.A.G./	US-9591404	03-07-2017	Chhetri, Amit Singh	
/P.A.G./	US-9615173	04-04-2017	Sako, Yoichiro	

Complete if Known Not Yet Assigned Application Number INFORMATION DISCLOSURE Filing Date Herewith First Named Inventor Elizabeth Ahra CHO STATEMENT BY APPLICANT (1) Art Unit Not Yet Assigned (Use as many sheets as necessary) Examiner Name Not Yet Assigned Sheet 20 Attorney Docket Number 15119.0002-01000

	U.S. PATENTS								
/P.A.G./	US-9635186	04-25-2017	Pandey, Ashutosh						
/P.A.G /	US-9641688	05-02-2017	Pandey, Ashutosh						
P.A.G /	US-9641929	05-02-2017	Li, Haiting						
/P.A.G./	US-9641935	05-02-2017	Ivanov, Plamen A.						
/P.A.G./	US-9761243	09-12-2017	Taenzer, Jon C.						
/P.A.G./	US-9813806	11-07-2017	Graham, Derek						
/P.A.G./	US-9826211-B2	11-21-2017	SAWA, HIROTAKA						
/P.A.G./	US-9854101	12-26-2017	Pandey, Ashutosh						
/P.A.G./	US-9866952	01-09-2018	Pandey, Ashutosh						
/P.A.G./	US-9894434	02-13-2018	Rollow, IV, J. Douglas						
/P.A.G./	US-9930448-B1	03-27-2018	Chen, Jingdong						
/P.A.G./	US-10244219-B2	03-26-2019	Sawa, Hirotaka						
/P.A.G./	US-D699712	02-18-2014	Bourne						
/P.A.G./	US-D784299	04-18-2017	Cho, Elizabeth Ahra						
/P.A.G./	US-D787481	05-23-2017	Tysso, Jorunn						

Examiner	Cite	Document Number	Issue or	Name of Patentee or	Pages, Columns, Lines, Where
Initials' No.3		Number-Kind Code ⁴ (if known)	Publication Date MM-DD-YYYY	Applicant of Cited Document	Relevant Passages or Relevant Figures Appear
P.A.G.	/	US-20020015500	02-07-2002	Belt, Harm Jan Willem	74500 3417,15
P.A.G.	/	US-20020041679	04-11-2002	Beaucoup, Franck	
P.A.G.	/	US-20020131580	09-19-2002	Smith, Steven Shawn	
ממי	,	US-20020149070	10-17-2002	Sheplak et al.	
P.A.G.	1	US-20030063762	04-03-2003	Tajima et al.	
P.A.G.	/	US-20030053639	03-20-2003	Beaucoup, Franck	
P.A.G.	/	US-20030059061	03-27-2003	Tsuji, Jungo	
P.A.G.	/	US-20030107478	06-12-2003	Hendricks, Richard S.	
P.A.G.	/	US-20030118200-A1	06-26-2003	BEAUCOUP, FRANCK	
P.A.G.	/	US-20030138119	07-24-2003	POCINO, MICHAEL A	
P.A.G.	/	US-20030161485	08-28-2003	Smith, Steven Shawn	
P.A.G.	/	US-20030185404	10-02-2003	Milsap, Jeffrey P.	
P.A.G.	/	US-20040013038	01-22-2004	Kajala, Matti	
P.A.G.	/	US-20040013252	01-22-2004	Craner, Michael L.	
P.A.G.	/	US-20040105557	06-03-2004	Matsuo, Naoshi	
P.A.G.	/	US-20040125942	07-01-2004	Beaucoup, Franck	
P.A.G	1	US-20040240664	12-02-2004	Freed, Evan Lawrence	

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCLOSU	IRF	Filing Date	Herewith	
	TEMENT BY A			First Named Inventor	Elizabeth Ahra CHO	
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	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned	
Sheet	8	of	20	Attorney Docket Number	15119.0002-01000	

	U.	S. PUBLISHED F	PATENT APPLICATIONS	
/P.A.G./	US-20050094580	05-05-2005	Kumar, Krishna A.	
/P.A.G./	US-20050094795	05-05-2005	Rambo, Darwin	
/P.A.G./	US-20050149320	07-07-2005	Kajala, Matti	
/P.A.G./	US-20050175189	08-11-2005	Lee, Yi-Bing	
/P.A.G./	US-20050213747	09-29-2005	Popovich, Steven	
/P.A.G./	US-20050271221	12-08-2005	Cerwin, Stephen A.	
P.A.G /	US-20050286698	12-29-2005	Bathurst, Tracy A.	
/P.A.G./	US-2006/0192976	08-31-2006	Hall et al.	
/P.A.G./	US-20060088173-A1	04-27-2006	Rodman; Jeffrey	
/P.A.G./	US-20060104458	05-18-2006	Kenoyer, Michael L.	
/P.A.G./	US-20060151256	07-13-2006	Lee, Jae H.	
/P.A.G./	US-20060165242	07-27-2006	Miki, Akira	
/P.A.G./	US-20060233353	10-19-2006	Beaucoup, Franck	
/P.A.G./	US-20060239471	10-26-2006	Mao, Xiadong	
/P.A.G./	US-20060262942	11-23-2006	Oxford, William V.	
/P.A.G./	US-20060269080	11-30-2006	OXFORD, WILLIAM V	
/P.A.G./	US-2007/0120029	05-31-2007	Keung et al.	
/P.A.G./	US-20070053524	03-08-2007	HAULICK, TIM	
P.A.G./	US-20070093714	04-26-2007	Beaucoup, Franck	
P.A.G /	US-20070116255	05-24-2007	Derkx, Rene M. M.	
P.A.G./	US-20070165871	07-19-2007	Roovers, David A. C.	
/P.A.G./	US-20070230712	10-04-2007	Belt, Harm J. W.	
/PAG/	LIS-20080056517-A1	03-06-2008	Algazi; V. Balph	***************************************
/P.A.G./	US-20080101622	05-01-2008	Sugiyama, Akihiko	
/P.A.G./	US-20080130907	06-05-2008	Sudo, Takashi	
/P.A.G./	US-20080144848	06-19-2008	Buck, Markus	
/P.A.G./	US-20080232607	09-25-2008	Tashev, Ivan	
/P.A.G./	US-20080247567	10-09-2008	Kjolerbakken, Morgan	
/P.A.G./	US-20080259731	10-23-2008	Happonen, Aki P.	
/P.A.G./	US-20080260175	10-23-2008	Elko, Gary W.	
/P.A.G./	US-20080285772	11-20-2008	Haulick, Tim	
/P.A.G./	US-2000/0087001	04-02-2000	- diang, Paiger	
/P.A.G./	US-20090003586	01-01-2009	Lai, Shien-Neng	
/P.A.G./	US-20090030536	01-29-2009	Gur, Arie	
/P.A.G./	US-20090052684	02-26-2009	Ishibashi, Toshiaki	

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCLOSU	IRF	Filing Date	Herewith	
	TEMENT BY A			First Named Inventor	Elizabeth Ahra CHO	
SIA	I CIVICIVI DI A	APPLICAN	(1)	Art Unit	Not Yet Assigned	
	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned	
Sheet	9	of	20	Attorney Docket Number	15119.0002-01000	

	U.S. PUBLISHED PATENT APPLICATIONS							
/P.A.G./	US-20090087000	04-02-2009	Ko, Sang-Chul					
/P.A.G./	US-20090129609-A1	05-21-2009	Oh; Kwang-cheol					
/P.A.G./	US-20090147967	06-11-2009	Ishibashi, Toshiaki					
/P.A.G./	US-20090150149	06-21-2009	Cutter					
P.A.G./	US-20090169027	07-02-2009	Ura					
P.A.G./	US-20090274318	11-05-2009	Ishibashi, Toshiaki					
/P.A.G./	US-20090310794	12-17-2009	Ishibashi, Toshiaki					
/P.A.G./	US-20100314513	12-16-2010	Evans et al.					
P.A.G./	US-20100034397-A1	02-11-2010	Nakadai; Kazuhiro					
P.A.G./	US-20100074433	03-25-2010	Zhang, Zhengyou					
/P.A.G./	US-20100111324	05-06-2010	Yeldener, Suat					
/P.A.G./	US-20100119097	05-13-2010	Ohtsuka, Yoshio					
/P.A.G./	US-20100128892	05-27-2010	Chen, Shaohai					
/P.A.G./	US-20100131749	05-27-2010	Kim, Kyung Hwa					
/P.A.G./	US-20100150364	06-17-2010	Buck, Markus					
P.A.G./	US-20100189275	07-29-2010	Christoph, Markus					
P.A.G./	US-20100202628-A1	08-12-2010	Meyer; Jens M.					
/P.A.G./	US-20100215184	08-26-2010	Buck, Markus					
/P.A.G./	US-20100217590	08-26-2010	Nemer, Elias					
/P.A.G./	US-20110007921	01-13-2011	Stewart, Jr. et al.					
/P.A.G./	US-20110311085	12-22-2011	Stewart, Jr. et al.					
/P.A.G./	US-20110038229	02-17-2011	Beaucoup, Franck					
/P.A.G./	US-20110096915	04-28-2011	Nemer, Elias					
/P.A.G./	US-20110164761	07-07-2011	McCowan, Iain Alexander					
/P.A.G./	US-20110194719-A1	08-11-2011	FRATER, ROBERT HENRY					
/P.A.G./	US-20110211706	09-01-2011	Tanaka, Ryo					
/P.A.G./	US-20110311064	12-22-2011	Teutsch, Heinz					
/P.A.G./	US-20110317862-A1	12-29-2011	Hosoe; Seiichiro					
P.A.G /	US-20120002835	01-05-2012	Stewart, Jr. et al.					
P.A.G./	US-20120080260	04-05-2012	Stewart, Jr. et al.					
P.A.G./	US-20120177219	07-12-2012	Mullen et al.					
P.A.G./	US-20120294472	11-22-2012	Hudson et al.					
P.A.G./	US-20120027227	02-02-2012	Kok, Hui Siew					
P.A.G./	US-20120076316	03-29-2012	Zhu, Manli					
P.A.G./	US-20120093344	04-19-2012	Sun, Haohai					

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCI OSI	IRF	Filing Date	Herewith	
	TEMENT BY A			First Named Inventor	Elizabeth Ahra CHO	
SIA	I E IVI E IVI E IVI	APPLICAI	11 (1)	Art Unit	Not Yet Assigned	
	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned	
Sheet	10	of	20	Attorney Docket Number	15119.0002-01000	

/P.A.G. /P.A.G.		60 05-24-2012	Kim, Lae-Hoon	1
/P.A.G.		near manufacture desired 110	Kini, Lac-Hoon	
	/ US-201201281	75 05-24-2012	Visser, Erik	
/P.A.G.	/ US-201201556	688 06-21-2012	Wilson, Willsingh	
P.A.G.	110 20120100	326 07-05-2012	Jeong, Jae-Hoon	
P.A.G.		29 07-19-2012	Forutanpour, Babak	
P.A.G.	/ US-201202247	709 09-06-2012	Keddem, Natan	
P.A.G.	/ US-201202436	698 09-27-2012	Elko, Gary W.	
P.A.G.	/ US-201202625	336 10-18-2012	Chen, Wei-Ge	
P.A.G	/ US-201202880	079 11-15-2012	Burnett, Gregory C.	
/PAG	, US-201202881	14-A1 11-15-2012	Duraiswami; Ramani	
/P.A.G.	/ US-201203271	15 12-27-2012	Chhetri, Amit S.	
/P.A.G.	The state of the s	01-03-2013	Stewart, Jr. et al.	
/P.A.G.	LIS 2012001E0	01-17-2013	Stewart, Jr. et al.	
/P.A.G.		02-14-2013	Pandey et al.	
/P.A.G.	/ US-201300946	04-18-2013	Tanaka et al.	
/P.A.G.	/ US-201301011	41 04-25-2013	McElveen	
/P.A.G.	/ US-201302511	81 09-26-2013	Stewart, Jr. et al.	
P.A.G.	/ US-201302641	44 10-10-2013	Hudson et al.	
/P.A.G.	/ US-201303365	12-19-2013	Stewart et al.	
/P.A.G.	/ US-201300168	347 01-17-2013	Steiner, Arndt	
/P.A.G.	/ US-201300296	01-31-2013	Kawaguchi, Hiroshi	
P.A.G.	/ US-201300342	241 02-07-2013	Pandey, Ashutosh	
P.A.G	, US-201300839	04-04-2013	Bathurst, Tracy A.	
P.A.G	/ US-201301362	274 05-30-2013	Aehgren, Per	
P.A.G	/ US-201302065	08-15-2013	Yu, Qing Claire	
P.A.G	/ US-201302715	559 10-17-2013	Feng, Jinwei	
P.A.G	/ US-201303435	549 12-26-2013	Vemireddy, Krishna	
P.A.G	/ / US-201402646	654 09-18-2014	Salmon, Jay	
P.A.G	/ US-201402657	774 09-18-2014	Stewart, Jr. et al.	
P.A.G	/ US-201402702	271 09-18-2014	Dehe et al.	
P.A.G.	/ US-201402865	518 09-25-2014	Stewart, Jr. et al.	
P.A.G.		586 10-09-2014	Stewart, Jr. et al.	
P.A.G.	/ US-201403571	77 12-04-2014	Stewart, Jr. et al.	
P.A.G./	/ US-201400167	794 01-16-2014	Lu	
/P.A.G.	/ US-201400721	51 03-13-2014	OCHS	

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	DISCLOSU	IRF	Filing Date	Herewith	
	TEMENT BY			First Named Inventor	Elizabeth Ahra CHO	
SIAI	I E IVI E IVI E I	APPLICAN	(1)	Art Unit	Not Yet Assigned	
	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned	
Sheet 11 of 20		Attorney Docket Number	15119.0002-01000			

	U	S. PUBLISHED F	PATENT APPLICATIONS	
P.A.G./	US-20140098964	04-10-2014	Rosca, Justinian	
P.A.G /	US-20140307882	10-16-2014	Leblanc	
/P.A.G./	US-20140341392	11-20-2014	Lambert, David K.	
P.A.G./	US-201410233777	08-21-2014	Tseng et al.	
/P.A.G./	US-20150070188	03-12-2015	Aramburu, Jason	
/P.A.G./	US-20150078582-A1	03-19-2015	Graham et al.	
P.A.G./	US-20150118960	04-30-2015	Petit et al.	
P.A.G./	US-20150030172	01-29-2015	Gaensler	
P.A.G /	US-20150055796-A1	02-26-2015	Nugent; David	
P.A.G./	US-20150055797	02-26-2015	Nguyen, Eric	
P.A.G./	US-20150078581	03-19-2015	Etter, Walter	1
P.A.G./	US-20150078582-A1	03-19-2015	Graham, Derek	
P.A.G /	US-20150117672-A1	04-30-2015	CHRISTOPH, MARKUS	
P.A.G /	US-20150126255	05-07-2015	Yang	
P.A.G./	US-20150281832-A1	10-01-2015	KISHIMOTO, Michinori	
P.A.G./	US-20150281833-A1	10-01-2015	SHIGENAGA, Shinichi	
P.A.G./	US-20150350621	12-03-2015	Sawa, Hirotaka	
P.A.G./	US-20160031700	02-04-2016	Sparks et al.	
P.A.G./	US-20160029120	01-28-2016	Nesta	
P.A.G./	US-20160080867-A1	03-17-2016	Nugent, David	
P.A.G./	US-20160111109	04-21-2016	Tsujikawa, Masanori	
P.A.G./	US-20160142548	05-19-2016	Pandey, Ashutosh	
P.A.G./	US-20160142815	05-19-2016	Norris, John	
P.A.G./	US-20160148057-A1	05-26-2016	OH; Jaeyoon	
P.A.G./	US-20160150316	2016-05-26	Kubota, Hiroshi	
P.A.G./	US-20160234593-A1	08-11-2016	MATSUMOTO; Hiroyuki	
P.A.G./	US-20160295279	10-06-2016	Srinivasan, Venugopal	
F.A.G./	US-20160300584	10 13 2016	Pandoy, Achutech	
P.A.C./	US-20160302002	10-13-2016	Lambert, David K	
PAG/	LIS-20160302006	10-13-2016	Pandey, Ashutosh	000000000000000000000000000000000000000
P.A.G /	US-20160323668-A1	11-03-2016	Abraham; Mathew	
P.A.G./	US-20160330545-A1	11-10-2016	McElveen; James Keith	
P.A.G./	US-20160337523	11 17 2016	Pandey, Ashutesh	
P.A.G./	US-20160353200	12-01-2016	Bigeh, Fred	
P.A.G./	US-20170019744-A1	01-19-2017	Matsumoto, Hiroyuki	+

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCLOSE	IRF	Filing Date	Herewith	
	TEMENT BY A			First Named Inventor	Elizabeth Ahra CHO	
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(Use as many sheets as necessary)				Examiner Name	Not Yet Assigned	
Sheet	12	of	20	Attornev Docket Number	15119.0002-01000	

	U.	S. PUBLISHED F	PATENT APPLICATIONS	
/P.A.G./	US-20170105066	04-13-2017	McLaughlin, Hugh Joseph	
/P.A.G /	US 20170184849		Pandey, Ashutosh	
P.A.G /	US 20170134850	05 11 2017		000000
/P.A.G./	US-20170164101-A1	06-08-2017	Rollow, IV; J. Douglas	
/P.A.G./	US-20170180861-A1	06-22-2017	Chen, Hanchi	
/P.A.G./	US-20170264999-A1	09-14-2017	FUKUDA, Teppei	
/P.A.G./	US-20170374454-A1	12-28-2017	Bernardini; Alberto	
7P.A.G.7	U3-20180160224	00-07-2018	Graham, Derek L.	000000

Note: Submission of copies of U.S. Patents and published U.S. Patent Applications is not required.

		FORE		DOCUMENTS		
Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ⁵ Number ⁶ Kind Code ⁷ (<i>if known</i>)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Translation
/P.A.G	./	CA 2505496	10-27-2006	UNIV SHERBROOKE		
/P.A.		CA 2838856 A1	12-20-2012	RGB Systems Inc.		
/P.A.G		CA 2846323 A1	09-14-2014	RGB SYSTEMS INC		
/P.A.G	./	CN 102646418	08-22-2012	BEIJING POWERCOM TECHNOLOGIES CO LTD		
/P.A.G		CN 102821336	12-12-2012	EOGO AUDIO SHANGHAI CO LTD		
P.A.G	./	CN 102833664 A1	12-19-2012	RGB SYSTEMS INC		
P.A.G		CN 102860039	01-02-2013	FRATER ROBERT HENRY		
P.A.G	./	CN 104080289 A1	10-01-2014	RGB SYSTEMS INC		
/P.A.G	./	CN 104581463	04-29-2015	HARMAN BECKER AUTOMOTIVE SYS		
/P.A.G	./	DE 2941485	04-23-1981	HASENAECKER HANS JOSEF		
P.A.G		EP 0594098	04-27-1994	IST TRENTINO DI CULTURA		
P.A.G	./	EP 0869697	10-07-1998	LUCENT TECHNOLOGIES INC		
P.A.G	./	EP 1184676	03-06-2002	NOKIA MOBILE PHONES LTD		
P.A.G		EP 0944228	06-04-2003	NIPPON TELEGRAPH & TELEPHONE		
P.A.G	./	EP 1439526	07-21-2004	SAMSUNG ELECTRONICS CO LTD		
P.A.G	./	EP 1651001	04-26-2006	POLYCOM INC		
P.A.G	/	EP 1727344	11-29-2006	BROADCOM CORP		
P.A.G	1	EP 1906707	04-02-2008	YAMAHA CORP		
P.A.G	1	EP 1962547	08-27-2008	YAMAHA CORP		
P.A.G.	1	EP 2197219	06-16-2010	HARMAN BECKER AUTOMOTIVE SYS		

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCLOSU	IRF	Filing Date	Herewith	
	EMENT BY A			First Named Inventor	Elizabeth Ahra CHO	
SIAI	LIVILIAI DI A	AFFLICAN	11 (1)	Art Unit	Not Yet Assigned	
	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned	
Sheet 13 of 20		Attorney Docket Number	15119.0002-01000			

	00000000000000000000000000000000000000	FOREIGN PATENT		
	EP 2360940	08-24-2011	TELEVICINY	
P.A.G./	EP 2721837 A1	04-23-2014	RGB Systems Inc.	
P.A.G./	EP 2778310 A1	09-17-2014	RGB SYSTEMS INC	
/P.A.G./	EP 3131311	02-15-2017	NOKIA TECHNOLOGIES OY	
P.A.G./	JP JPH01260967	10-18-1989	NEC CORP	
P.A.G./	JP JPH07336790	12-22-1995	NEC CORP	
P.A.G./	JP 3175622	06-11-2001	YAMAHA CORP	
P.A.G./	JP 2003087890	03-20-2003	SONY CORP	
/P.A.G./	JP 2004349806	12-09-2004	NIPPON TELEGRAPH & TELEPHONE	
/P.A.G./	JP 2004537232	12-09-2004	KONINKL PHILIPS ELECTRONICS NV	
P.A.G./	JP 2005323084	11-17-2005	NIPPON TELEGRAPH & TELEPHONE	
P.A.G./	JP 2006094389	04-06-2006	YAMAHA CORP	
P.A.G./	JP 2006101499	04-13-2006	HARMAN BECKER AUTOMOTIVE SYS	
P.A.G./	JP 4120646	08-10-2006	YAMAHA CORP	
P.A.G./	JP 4196956	09-07-2006	YAMAHA CORP	
P.A.G./	JP 4258472	08-10-2006	YAMAHA CORP	
P.A.G./	JP 2006340151	12-14-2006	MATSUSHITA ELECTRIC IND CO LTD	
P.A.G./	JP 4752403	03-22-2007	YAMAHA CORP	
P.A.G./	JP 4760160	01-18-2007	YAMAHA CORP	
P.A.G./	JP 4867579	06-14-2007	YAMAHA CORP	
P.A.G./	JP 2007208503	08-16-2007	YAMAHA CORP	
.A.G./	JP 2007228069	09-06-2007	YAMAHA CORP	
P.A.G./	JP 2007228070	09-06-2007	YAMAHA CORP	
P.A.G./	JP 2007274131	10-18-2007	YAMAHA CORP	
P.A.G./	JP 2007274463	10-18-2007	YAMAHA CORP	
P.A.G./	JP 2008005347	01-10-2008	YAMAHA CORP	
P.A.G./	JP 2008042754	02-21-2008	YAMAHA CORP	
	JP 5028944	.05-01-2008	VAMAHA CORP	
	JP 2008154056	07-03-2008	YAMAHA CORP	
P.A.G./	JP 2008259022	10-23-2008	YAMAHA CORP	
P.A.G./				
P.A.G./	JP 2008312002	12-25-2008	YAMAHA CORP	
/P.A.G./	_	09-10-2009	VAMAHA CORP	
***************************************	JP 2010028653	02-04-2010	NIPPON TELEGRAPH & TELEPHONE	000000000000000000000000000000000000000

Complete if Known Not Yet Assigned Application Number INFORMATION DISCLOSURE Filing Date Herewith First Named Inventor Elizabeth Ahra CHO STATEMENT BY APPLICANT (1) Art Unit Not Yet Assigned (Use as many sheets as necessary) Examiner Name Not Yet Assigned Sheet 20 Attorney Docket Number 15119.0002-01000

		FOREIGN PATENT	DOCUMENTS	
/P.A.G./	JP 2010114554	05-20-2010	YAMAHA CORP	
/P.A.G./	JP 2010268129	11-25-2010	OKI ELECTRIC IND CO	
P.A.G./	JP 2011015018	01-20-2011	CLARION CO LTD	
/P.A.G./	KR 100960781	01-07-2004	MICROSOFT CORP	
/P.A.G./	WO 2006049260	05-11-2006	NEC CORP	
/P.A.G./	WO 2006071119	07-06-2006	TANDBERG TELECOM AS	
10222222222222	WO 2006121896	11-16-2006	SONY COMPUTER	
	***************************************		ENTERTAINMENT INC	***************************************
/P.A.G./	WO 2010001508	01-07-2010	PANASONIC CORP	
/P.A.G./	WO 2010140084	12-09-2010	KONINKL PHILIPS ELECTRONICS NV	
/P.A.G./	WO 2010144148 A2	12-16-2010	RGB Systems Inc.	
/P.A.G./	WO 2011104501	09-01-2011	BERRY MICHAEL TREVOR	
/P.A.G./	WO 2012174159 A1	12-20-2012	RGB SYSTEMS INC	
/P.A.G./	WO 2012160459	11-29-2012	KONINKL PHILIPS ELECTRONICS NV	
/P.A.G./	WO 2016176429	11-03-2016	SHURE ACQUISITION HOLDINGS INC	

		NONPATENT LITERATURE DOCUMENTS	9
Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation ⁶
/P.A.G.	/	Advanced Network Devices, IPSCM Ceiling Tile IP Speaker, Feb. 2011,2 pgs.	
/P.A.G.	100.0	Advanced Network Devices, IPSCM Standard 2' by 2' Ceiling Tile Speaker, 2 pgs.	
/P.A.G.	/	Affes et al., A Signal Subspace Tracking Algorithm for Microphone Array Processing of Speech, IEEE Trans. On Speech and Audio Processing, Vol. 5, No. 5, Sept. 1997, pp. 425-437.	
/P.A.G.	/	Affes et al., A Source Subspace Tracking Array of Microphones for Double Talk Situations, 1996 IEEE International Conference on Acoustics, Speech, and Signal Processing Conference Proceedings, May 1996, pp. 909-912.	
/P.A.G.	/	Affes et al., An Algorithm for Multisource Beamforming and Multitarget Tracking, IEEE Trans. On Signal Processing, Vol. 44, No. 6, June 1996, pp. 1512-1522.	
/P.A.G.	/	Affes et al., Robust Adaptive Beamforming via LMS-Like Target Tracking, Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing, Apr. 1994, pp. IV-269-IV-272.	
P.A.G.	/	Armstrong World Industries, Inc., I-Ceilings Sound Systems Speaker Panels, 2002, 4 pgs.	
/P.A.G.	/	Arnold et al , A Directional Acoustic Array Using Silicon Micromachined Piezoresistive Microphones, Journal of the Acoustical Society of America, 113(1), Jan. 2003, pp. 289-298.	
/P.A.G.	/	Atlas Sound, I128SYSM IP Compliant Loudspeaker System with Microphone Data Sheet, 2009, 2 pgs.	
/p.A.G.	/	Atlas Sound,1'X2' IP Speaker with Mioophone for Suspended Ceiling Systems, https://www.atlasied.com/i128sysm, retrieved Oct. 25, 2017, 5 pgs.	
/P.A.G.	/	Audio Technica, ES945 Omnidirectional Condenser Boundary Microphones, https://eu.audio-technica.com/resources/ES945%20Specfications.pdf, 2007, 1 pg.	
/P.A.G.	1	Audix Microphones, Audix Introduces Innovative Ceiling Mics, http://audixusa.com/docs_12/latest_news/EFpIFkAAklOtSdolke.shtml, June 2011, 6 pgs.	
/P.A.G	1	Audix Microphones, M70 Flush Mount Ceiling Mic, May 2016, 2 pgs.	

				C	Complete if Known		
				Application Number	Not Yet Assigned		
INF	ORMATION D	ISCLOSE	IRF	Filing Date	Herewith		
	TEMENT BY A			First Named Inventor	Elizabeth Ahra CHO		
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	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned		
Sheet	15	of	20	Attorney Docket Number	15119.0002-01000		

		NONPATENT LITERATURE DOCUMENTS	
/P.A.G	/	Beh et al., Combining Acoustic Echo Cancellation and Adaptive Beamforming for Achieving Robust Speech Interface in Mobile Robot, 2008 IEEE/RSJ International Conference on Intelligent Robots and Systems, Sept. 2008, pp. 1693-1698.	
/P.A.G	/	Benesty et al., A New Class of Doubletalk Detectors Based on Cross-Correlation, IEEE Transactions on Speech and Audio Processing, vol. 8, no. 2, March 2000, pp. 168-172.	
/P.A.G	1	Benesty et al., Adaptive Algorithms for Mimo Acoustic Echo Cancellation, https://publik.tuwien.ac.at/files/pub-et_9085.pdf, 2003, pp. 1-30.	
/P.A.G	1	Benesty et al., Frequency-Domain Adaptive Filtering Revisited, Generalization to the Multi-Channel Case, and Application to Acoustic Echo Cancellation, 2000 IEEE International Conference on Acoustics, Speech, and Signal Processing Proceedings, June 2000, pp. 789-792.	
P.A.G	1	Beyer Dynamic, Classis BM 32-33-34 DE-EN-FR 2016,1 pg.	
/P.A.G	/	Beyer Dynamic, Classis-BM-33-PZ A1,1 pg.	
/P.A.G		Boyd, et al., Convex Optimization, March 15, 1999, 216 pgs.	
P.A.G.	/	Brandstein et al., Eds., Microphone Arrays: Signal Processing Techniques and Applications, Digital Signal Processing, Springer-Verlag Berlin Heidelberg, 2001, 401 pgs.	
P.A.G.	/	Bruel & Kjaer, by J.J. Christensen and J. Hald, Technical Review: Beamforming, No. 1, 2004, 54 pgs.	
P.A.G.	/	BSS Audio, Soundweb London Application Guides, 2010, 120 pgs.	
P.A.G.	/	Buchner et al., An Acoustic Human-Machine Interface with Multi-Channel Sound Reproduction, IEEE Fourth Workshop on Multimedia Signal Processing, Oct. 2001, pp. 359-364.	
/P.A.G	1	Buchner et al., An Efficient Combination of Multi-Channel Acoustic Echo Cancellation with a Beamforming Microphone Array, International Workshop on Hands-Free Speech Communication (HSC2001), April 2001, pp. 55-58.	
P.A.G	1	Buchner et al., Full-Duplex Communication Systems Using Loudspeaker Arrays and Microphone Arrays, IEEE International Conference on Multimedia and Expo, Aug. 2002, pp. 509-512.	
P.A.G.	/	Buchner et al., Generalized Multichannel Frequency-Domain Adaptive Filtering: Efficient Realization and Application to Hands-Free Speech Communication, Signal Processing 85, 2005, pp. 549-570.	
P.A.G.	/	Buchner et al., Multichannel Frequency-Domain Adaptive Filtering with Application to Multichannel Acoustic Echo Cancellation, Adaptive Signal Processing, 2003, pp. 95-128.	
P.A.G.	1	Buchner, Multichannel Acoustic Echo Cancellation, http://www.buchner-net.com/mcaec.html, June 2011.	
P.A.G	/	Buck, Aspects of First-Order Differential Microphone Arrays in the Presence of Sensor Imperfections, Transactions on Emerging Telecommunications Technologies, vol. 13, no. 2, MarApr. 2002, pp. 115-122.	
P.A.G	/	Buck, et al., Self-Calibrating Microphone Arrays for Speech Signal Acquisition: A Systematic Approach, Signal Processing, vol. 86, 2006, pp. 1230-1238.	
P.A.G.	,	Burton et al., A New Structure for Combining Echo Cancellation and Beamforming in Changing Acoustical Environments, IEEE International Conference on Acoustics, Speech and Signal Processing, 2007, pp. 1-77 - 1-80.	
P.A.G.	/	Campbell, Adaptive Beamforming Using a Microphone Array for Hands-Free Telephony, Virginia Polytechnic Institute and State University, Feb. 1999, 154 pgs.	
P.A.G.	/	Chan et al., Uniform Concentric Circular Arrays with Frequency-Invariant Characteristics—Theory, Design, Adaptive Beamforming and DOA Estimation, IEEE Transactions on Signal Processing, Vol. 55, No. 1, Jan. 2007, pp. 165-177.	
P.A.G.	/	Chen et al., Design of Robust Broadband Beamformers with Passband Shaping Characteristics using Tikhonov Regularization, IEEE Transactions on Audio, Speech, and Language Processing, vol. 17, no. 4, May 2009, pp. 565-681.	
P.A.G.	/	Chen, et al., A General Approach to the Design and Implementation of Linear Differential Microphone Arrays, Asia-Pacific Signal and Information Processing Association Annual Summit and Conference, 2013, 7 pgs.	
P.A.G.	/	Chou, "Frequency-Independent Beamformer with Low Response Error, " 1995 International Conference on Acoustics, Speech, and Signal Processing, pp. 2995-2998, May 9, 1995, 4 pp.	
P.A.G.	/	Chu, Desktop Mic Array for Teleconferencing, 1995 International Conference on Acoustics, Speech, and Signal Processing, May 1995, pp. 2999-3002.	
P.A.G.	/	ClearOne Communications, XAP Audio Conferencing White Paper, Aug. 2002, 78 pgs.	

				Complete if Known		
				Application Number	Not Yet Assigned	
INFO	ORMATION D	ISCLOSU	IRE	Filing Date	Herewith	
	EMENT BY A			First Named Inventor	Elizabeth Ahra CHO	
JIAI	CIVILIA I DI A	AFFLICAN	(1)	Art Unit	Not Yet Assigned	
	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned	
Sheet	16	of	20	Attorney Docket Number	15119.0002-01000	

		NONPATENT LITERATURE DOCUMENTS	
P.A.G.	/	ClearOne, Beamforming Microphone Array, March 2012, 6 pgs.	
P.A.G.		ClearOne, Ceiling Microphone Array Installation Manual, January 9, 2012, 20 pgs.	
P.A.G.	100	Cook, et al., An Alternative Approach to Interpolated Array Processing for Uniform Circular Arrays, Asia-Pacific Conference on Circuits and Systems, 2002, pp. 411-414.	
P.A.G	/	Cox et al., Robust Adaptive Beamforming, IEEE Trans. Acoust., Speech, and Signal Processing, vol. ASSP-35, no. 10, Oct. 1987, pp. 1365-1376.	
P.A.G	1	CTG Audio, Ceiling Microphone CTG CM-01, June 5, 2008, 2 pgs.	
P.A.G.	/	CTG Audio, CM-01 & CM-02 Ceiling Microphones Specifications, 2 pgs.	
P.A.G.		CTG Audio, CM-01 & CM-02 Ceiling Microphones, 2017, 4 pgs.	
P.A.G.		CTG Audio, Expand Your IP Teleconferencing to Full Room Audio, http://www.ctgaudio.com/expand-your-ip-teleconferencing-to-full-room-audio-while-conquering-echo-cancellation-issues.html, Jul. 29, 2014, 3 pgs.	
P.A.G.	/	CTG Audio, Installation Manual, Nov. 21, 2008, 25 pgs.	
P.A.G.	/	CTG Audio, White on White - Introducing the CM-02 Ceiling Microphone, https://ctgaudio.com/white-on-white-introducing-the-cm-02-ceiling-microphone/, Feb. 20, 2014, 3 pgs.	
P.A.G.	1	Dahl et al., Acoustic Echo Cancelling with Microphone Arrays, Research Report 3/95, Univ. of Karlskrona/Ronneby, April 1995, 64 pgs.	
P.A.G.	1	Desiraju et al., Efficient Multi-Channel Acoustic Echo Cancellation Using Constrained Sparse Filter Updates in the Subband Domain, ITG-Fachbericht 252: Speech Communication, Sep. 2014, 4 pgs.	
P.A.G	/	DiBiase et al., Robust Localization in Reverberent Rooms, in Brandstein, ed., Microphone Arrays: Techniques and Applications, 2001, Springer-Verlag Berlin Heidelberg, pp. 157-180.	
P.A.G	./	Do et al., A Real-Time SRP-PHAT Source Location Implementation using Stochastic Region Contraction (SRC) on a Large-Aperture Microphone Array, 2007 IEEE International Conference on Acoustics, Speech and Signal Processing - ICASSP '07, Apr. 2007, pp. 1-121 - 1-124.	
P.A.G.	1	Fan et al., Localization Estimation of Sound Source by Microphones Array, Procedia Engineering 7, 2010, pp. 312-317	
P.A.G.	1	Flanagan et al., Autodirective Microphone Systems, Acustica, Vol. 73,1991, pp. 58-71.	
P.A.G.	1	Flanagan et al., Computer-Steered Microphone Arrays for Sound Transduction in Large Rooms, J. Acoust. Soc. Am. 78 (5), Nov. 1985, pp. 1508-1518.	
P.A.G.	/	Frost, III, An Algorithm for Linearly Constrained Adaptive Array Processing, Proc. IEEE, vol. 60, no. 8, Aug. 1972, pp. 926-935.	
P.A.G.	/	Gannot et al., Signal Enhancement using Beamforming and Nonstationarity with Applications to Speech, IEEE Trans. On Signal Processing, vol. 49, no. 8, Aug. 2001, pp. 1614-1626.	
P.A.G.	/	Gansler et al., A Double-Talk Detector Based on Coherence, IEEE Transactions on Communications, vol. 44, no. 11, Nov. 1996, pp. 1421-1427.	
P.A.G.	/	Gazor et al., Robust Adaptive Beamforming via Target Tracking, IEEE Transactions on Signal Processing, Vol. 44, No. 5, June 1996, pp. 1589-1593.	
P.A.G.	/	Gazor et al., Wideband Multi-Source Beamforming with Adaptive Array Location Calibration and Direction Finding, 1995 International Conference on Acoustics, Speech, and Signal Processing, May 1995, pp. 1904-1907.	
P.A.G.	/	Gentner Communications Corp., AP400 Audio Perfect 400 Audioconferencing System Installation & Operation Manual, Nov. 1998, 80 pgs.	
A.G.,		Gentner Communications Corp., XAP 800 Audio Conferencing System Installation & Operation Manual, Oct. 2001, 152 pgs.	
P.A.G.,	1	Gil-Cacho et al., Multi-Microphone Acoustic Echo Cancellation Using Multi-Channel Warped Linear Prediction of Common Acoustical Poles, 18th European Signal Processing Conference, Aug. 2010, pp. 2121-2125.	
P.A.G.		Gritton et al., Echo Cancellation Algorithms, IEEE ASSP Magazine, vol. 1, issue 2, Apr. 1984, pp. 30-38.	
P.A.G.	/	Hamalainen et al., Acoustic Echo Cancellation for Dynamically Steered Microphone Array Systems, 2007 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, Oct. 2007, pp. 58-61.	
P.A.G.	/	Herbordt, Combination of Robust Adaptive Beamforming with Acoustic Echo Cancellation for Acoustic Human/Machine Interfaces, Friedrich-Alexander University, 2003, 293 pgs.	

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCLOSE	IRF	Filing Date	Herewith	
				First Named Inventor	Elizabeth Ahra CHO	
SIAI	STATEMENT BY APPLICANT (1)			Art Unit	Not Yet Assigned	
	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned	
Sheet	17	of	20	Attorney Docket Number	15119.0002-01000	

		NONPATENT LITERATURE DOCUMENTS	
/P.A.G.	/	Herbordt et al., A Real-time Acoustic Human-Machine Front-End for Multimedia Applications Integrating Robust Adaptive Beamforming and Stereophonic Acoustic Echo Cancellation, 7th International Conference on Spoken Language Processing, Sept. 2002, 4 pgs.	
/P.A.G.	1	Herbordt et al., GSAEC - Acoustic Echo Cancellation embedded into the Generalized Sidelobe Canceller, 10th European Signal Processing Conference, Sept. 2000, 5 pgs.	
/P.A.G	/	Herbordt et al., Joint Optimization of LCMV Beamforming and Acoustic Echo Cancellation for Automatic Speech Recognition, IEEE International Conference on Acoustics, Speech, and Signal Processing, Mar. 2005, pp. III-77 - III-80.	
/P.A.G	./	Herbordt et al., Multichannel Bin-Wise Robust Frequency-Domain Adaptive Filtering and Its Application to Adaptive Beamforming, IEEE Transactions on Audio, Speech, and Language Processing, vol. 15, no. 4, May 2007, pp. 1340-1351.	
P.A.G.	1	Huang et al., Immersive Audio Schemes: The Evolution of Multiparty Teleconferencing, IEEE Signal Processing Magazine, Jan. 2011, pp. 20-32.	
/P.A.G	./	International Search Report and Written Opinion for PCT/US2016/029751 dated Nov. 28, 2016, 21 pp.	
/P.A.G	./	InvenSense Inc., Microphone Array Beamforming, Dec. 31, 2013, 12 pgs.	
/P.A.G	./	Ishii et al., Investigation on Sound Localization using Multiple Microphone Arrays, Reflection and Spatial Information, Japanese Society for Artificial Intelligence, JSAI Technical Report, SIG-Challenge-B202-11, 2012, pp. 64-69.	
/P.A.G	./	Ito et al., Aerodynamic/Aeroacoustic Testing in Anechoic Closed Test Sections of Low-speed Wind Tunnels, 16th AIAA/CEAS Aeroacoustics Conference, 2010, 11 pgs.	
P.A.G.	/	Johansson et al., Robust Acoustic Direction of Arrival Estimation using Root-SRP-PHAT, a Realtime Implementation, IEEE International Conference on Acoustics, Speech, and Signal Processing, Mar. 2005,4 pgs.	
/P.A.G	1	Johansson, et al., Speaker Localisation using the Far-Field SRP-PHAT in Conference Telephony, 2002 International Symposium on Intelligent Signal Processing and Communication Systems, 5 pgs.	
P.A.G.	/	Julstrom et al., Direction-Sensitive Gating: A New Approach to Automatic Mixing, J. Audio Eng. Soc., vol. 32, no. 7/8, July/August 1984, pp. 490-506.	
P.A.G.	/	Kahrs, Ed., The Past, Present, and Future of Audio Signal Processing, IEEE Signal Processing Magazine, Sept. 1997, pp. 30-57.	
P.A.G.		Kallinger et al., Multi-Microphone Residual Echo Estimation, 2003 IEEE International Conference on Acoustics, Speech, and Signal Processing, Apr. 2003, 4 pgs.	
P.A.G.	7	Kammeyer, et al., New Aspects of Combining Echo Cancellers with Beamformers, IEEE International Conference on Acoustics, Speech, and Signal Processing, Mar. 2005, pp. III-137 - III-140.	
P.A.G.	/	Kellermann, A Self-Steering Digital Microphone Array, 1991 International Conference on Acoustics, Speech, and Signal Processing, Apr. 1991, pp. 3581-3584.	
P.A.G.	/	Kellermann, Acoustic Echo Cancellation for Beamforming Microphone Arrays, in Brandstein, ed., Microphone Arrays: Techniques and Applications, 2001, Springer-Verlag Berlin Heidelberg, pp. 281-306.	
P.A.G.	7	Kellermann, Integrating Acoustic Echo Cancellation with Adaptive Beamforming Microphone Arrays, Forum Acusticum, Berlin, Mar. 1999, pp. 1-4.	
P.A.G.	/	Kellermann, Strategies for Combining Acoustic Echo Cancellation and Adaptive Beamforming Microphone Arrays, 1997 IEEE International Conference on Acoustics, Speech, and Signal Processing, Apr. 1997, 4 pgs.	
P.A.G.	/	Knapp, et al., The Generalized Correlation Method for Estimation of Time Delay, IEEE Transactions on Acoustics, Speech, and Signal Processing, vol. ASSP-24, no. 4, Aug. 1976, pp. 320-327.	
P.A.G.	/	Kobayashi et al., A Hands-Free Unit with Noise Reduction by Using Adaptive Beamformer, IEEE Transactions on Consumer Electronics, vol. 54, no. 1, Feb. 2008, pp. 116-122.	
P.A.G.	1	Kobayashi et al., A Microphone Array System with Echo Canceller, Electronics and Communications in Japan, Part 3, Vol. 89, No. 10, February 2, 2006, pp. 23-32.	
P.A.G.	/	Lebret, et al., Antenna Array Pattern Synthesis via Convex Optimization, IEEE Trans, on Signal Processing, vol. 45, no. 3, Mar. 1997, pp. 526-532.	
P.A.G.	/	Lectrosonics, LecNet2 Sound System Design Guide, June 2006, 28 pgs.	
P.A.G.,	1	Lee et al., Multichannel Teleconferencing System with Multispatial Region Acoustic Echo Cancellation, International Workshop on Acoustic Echo and Noise Control (IWAENC2003), Sept. 2003, pp. 51-54.	
P.A.G.	/	Lindstrom et al., An Improvement of the Two-Path Algorithm Transfer Logic for Acoustic Echo Cancellation, IEEE Transactions on Audio, Speech, and Language Processing, vol. 15, no. 4, May 2007, pp. 1320-1326.	

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCLOSU	IRE	Filing Date	Herewith	
	EMENT BY A			First Named Inventor	Elizabeth Ahra CHO	
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Sheet	18	of	20	Attorney Docket Number	15119.0002-01000	

		NONPATENT LITERATURE DOCUMENTS			
/P.A.G.	/	Liu et al., Adaptive Beamforming with Sidelobe Control: A Second-Order Cone Programming Approach, IEEE Signal Proc. Letters, vol. 10, no. 11, Nov. 2003, pp. 331-334.			
P.A.G.	/	Lobo, et al., Applications of Second-Order Cone Programming, Linear Algebra and its Applications 284, 1998, pp. 193-228.			
/P.A.G.	Tech., Mar. 23-25, 2013, pp. 1645-1648.				
P.A.G.	/	Marquardt et al., A Natural Acoustic Front-End for Interactive TV in the EU-Project DICIT, IEEE Pacific Rim Conference on Communications, Computers and Signal Processing, Aug. 2009, pp. 894-899.			
P.A.G.	/	Martin, Small Microphone Arrays with Postfilters for Noise and Acoustic Echo Reduction, in Brandstein, ed., Microphone Arrays: Techniques and Applications, 2001, Springer-Verlag Berlin Heidelberg, pp. 255-279.			
/P.A.G	./	Maruo et al., On the Optimal Solutions of Beamformer Assisted Acoustic Echo Cancellers, IEEE Statistical Signal Processing Workshop, 2011, pp. 641-644.			
P.A.G.	/	McCowan, Microphone Arrays: A Tutorial, April 2001, 36 pgs.			
/P.A.G.	/	Mohammed, A New Adaptive Beamformer for Optimal Acoustic Echo and Noise Cancellation with Less Computational Load, Canadian Conference on Electrical and Computer Engineering, May 2008, pp. 000123-000128.			
/P.A.G.	/	Mohammed, A New Robust Adaptive Beamformer for Enhancing Speech Corrupted with Colored Noise, AICCSA, April 2008, pp. 508-515.			
/p.a.g.	/	Mohammed, Real-time Implementation of an efficient RLS Algorithm based on IIR Filter for Acoustic Echo Cancellation, AICCSA, April 2008, pp. 489-494.			
P.A.G.	1	Myllyla et al., Adaptive Beamforming Methods for Dynamically Steered Microphone Array Systems, 2008 IEEE International Conference on Acoustics, Speech and Signal Processing, MarApr. 2008, pp. 305-308.			
P.A.G.	/	Nguyen-Ky et al., An Improved Error Estimation Algorithm for Sterephonic Acoustic Echo Cancellation Systems, 1st International Conference on Signal Processing and Communication Systems, Dec. 2007, 5 pgs.			
P.A.G.	/	Oh et al., Hands-Free Voice Communication in an Automobile With a Microphone Array, 1992 IEEE International Conference on Acoustics, Speech, and Signal Processing, Mar. 1992, pp. I-281-I-284.			
P.A.G.	/	Omologo, Multi-Microphone Signal Processing for Distant-Speech Interaction, Human Activity and Vision Summer School (HAVSS), INRIA Sophia Antipolis, Oct. 3, 2012, 79 pgs.			
P.A.G.	/	Pados et al., An Iterative Algorithm for the Computation of the MVDR Filter, IEEE Trans. On Signal Processing, vol. 49, no. 2, Feb. 2001, pp. 290-300.			
P.A.G.	/	Pettersen, Broadcast Applications for Voice-Activated Microphones, db, July/August 1985, 6 pgs.			
P.A.G.	,	Plascore, PCGA-XR1 3003 Aluminum Honeycomb Data Sheet, 2008, 2 pgs.			
P.A.G.	/	Polycom Inc., Vortex EF2211/EF2210 Reference Manual, 2003, 66 pgs.			
P.A.G.	/	Polycom, Inc., Polycom SoundStructure C16, C12, C8, and SR12 Design Guide, Nov. 2013, 743 pgs.			
P.A.G.	,	Polycom, Inc., Setting Up the Polycom HDX Ceiling Microphone Array Series, https://support.polycom.com/content/dam/polycom-support/products/Telepresence-and-Video/HDX%20Series/setup-maintenance/en/hdx_ceiling_microphone_array_setting_up.pdf, 2010, 16 pgs.			
P.A.G.,	1	Polycom, Inc., Vortex EF2241 Reference Manual, 2002, 68 pgs.			
P.A.G.,		Powers, Proving Adaptive Directional Technology Works: A Review of Studies, The Hearing Review, http://www.hearingreview.com/2004/04/proving-adaptive-directional-technology-works-a-review-of-studies/, Apr. 2004, 8 pgs.			
P.A.G.,	}	Rabinkin et al., Estimation of Wavefront Arrival Delay Using the Cross-Power Spectrum Phase Technique, 132nd Meeting of the Acoustical Society of America, Dec. 1996, pp. 1-10.			
P.A.G.	1	Rane Corp., Halogen Acoustic Echo Cancellation Guide, AEC Guide Version 2, Nov. 2013,16 pgs.			
P.A.G.	1	Rao et al., Fast LMS/Newton Algorithms for Sterophonic Acoustic Echo Cancellation, IEEE Transactions on Signal Processing, vol. 57, no. 8, Aug. 2009, pp. 2919-2930.			
P.A.G.	/	Reuven et al., Joint Acoustic Echo Cancellation and Transfer Function GSC in the Frequency Domain, 23rd IEEE Convention of Electrical and Electronics Engineers in Israel, Sep. 2004, pp. 412-415.			
/P.A.G.	/	Reuven et al., Joint Noise Reduction and Acoustic Echo Cancellation Using the Transfer-Function Generalized Sidelobe Canceller, Speech Communication, vol. 49, 2007, pp. 623-635.			

				Complete if Known		
				Application Number	Not Yet Assigned	
INF	ORMATION D	ISCLOSI	IRF	Filing Date	Herewith	
STATEMENT BY APPLICANT (1)				First Named Inventor	Elizabeth Ahra CHO	
SIA	STATEMENT OF APPLICANT (1)			Art Unit	Not Yet Assigned	
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Sheet	19	of	20	Attorney Docket Number	15119.0002-01000	

		NONPATENT LITERATURE DOCUMENTS	
/p.a.g.	/	Reuven et al., Multichannel Acoustic Echo Cancellation and Noise Reduction in Reverberant Environments Using the Transfer-Function GSC, 2007 IEEE International Conference on Acoustics, Speech and Signal Processing - ICASSP 07, Apr. 2007, pp. 1-81 -1-84.	
P.A.G	1	Ristimaki, Distributed Microphone Array System for Two-Way Audio Communication, Helsinki Univ. of Technology, Master's Thesis, June 15, 2009, 73 pgs.	
/P.A.G	./	Rombouts et al., An Integrated Approach to Acoustic Noise and Echo Cancellation, Signal Processing 85, 2005, pp. 849-871.	
P.A.G.	/	Sasaki et al., A Predefined Command Recognition System Using a Ceiling Microphone Array in Noisy Housing Environments, 2008 IEEE/RSJ International Conference on Intelligent Robots and Systems, Sep. 2008, pp. 2178-2184.	
P.A.G.	/	Sennheiser, New microphone solutions for ceiling and desk installation, https://en-us.sennheiser.com/news-new-microphone-solutions-for-ceiling-and-desk-installation, Feb. 2011, 2 pgs.	
P.A.G.	/	Sennheiser, TeamConnect Ceiling, https://en-us.sennheiser.com/conference-meeting-rooms-teamconnect-ceiling, 7 pgs.	
P.A.G.	/	Shure AMS Update, vol. 1, no. 1, 1983, 2 pgs.	
P.A.G.	/	Shure AMS Update, vol. 1, no. 2, 1983, 2 pgs.	
P.A.G.	/	Shure AMS Update, vol. 4, no. 4, 1997, 8 pgs.	
P.A.G.	/	Shure Inc., Microflex Advance, http://www.shure.com/americas/microflex-advance, 12 pgs.	
P.A.G.	/	Shure Inc., MX395 Low Profile Boundary Microphones, 2007, 2 pgs.	
P.A.G.	/	Shure Inc., MXA910 Ceiling Array Microphone, http://www.shure.com/americas/products/microphones/microflex-advance/mxa910-ceiling-array-microphone, 7 pgs.	
P.A.G.	/	Silverman et al., Performance of Real-Time Source-Location Estimators for a Large-Aperture Microphone Array, IEEE Transactions on Speech and Audio Processing, vol. 13, no. 4, July 2005, pp. 593-606.	
P.A.G.	/	Sinha, Ch. 9: Noise and Echo Cancellation, in Speech Processing in Embedded Systems, Springer, 2010, pp. 127-142.	
/P.A.G	./	Soda et al., Introducing Multiple Microphone Arrays for Enhancing Smart Home Voice Control, The Institute of Electronics, Information and Communication Engineers, Technical Report of IEICE, Jan. 2013, 6 pgs.	
/P.A.G	,	Symetrix, Inc., SymNet Network Audio Solutions Brochure, 2008, 32 pgs.	
P.A.G	/	Tandon et al., An Efficient, Low-Complexity, Normalized LMS Algorithm for Echo Cancellation, 2nd Annual IEEE Northeast Workshop on Circuits and Systems, Jun. 2004, pp. 161-164.	
P.A.G	/	Tetelbaum et al., Design and Implementation of a Conference Phone Based on Microphone Array Technology, Proc. Global Signal Processing Conference and Expo (GSPx), Sep. 2004, 6 pgs	
P.A.G.	/	Tiete et al., SoundCompass: A Distributed MEMS Microphone Array-Based Sensor for Sound Source Localization, SENSORS, Jan. 23, 2014, pp. 1918-1949.	
P.A.G.	/	TOA Corp., Ceiling Mount Microphone AN-9001 Operating Instructions, http://www.toaelectronics.com/media/an9001_mt1e.pdf, 1 pg.	
P.A.G.	/	Van Compernolle, Switching Adaptive Filters for Enhancing Noisy and Reverberant Speech from Microphone Array Recordings, Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing, Apr. 1990, pp. 833-836.	
P.A.G.,		Van Trees, Optimum Array Processing: Part IV of Detection, Estimation, and Modulation Theory, 2002, 54 pgs., pp. i-xxv, 90-95, 201-230.	
P.A.G.,	,	Van Veen et al., Beamforming: A Versatile Approach to Spatial Filtering, IEEE ASSP Magazine, vol. 5, issue 2, Apr. 1988, pp. 4-24.	
P.A.G.,	,	Wang et al., Combining Superdirective Beamforming and Frequency-Domain Blind Source Separation for Highly Reverberant Signals, EURASIP Journal on Audio, Speech, and Music Processing, vol. 2010, pp. 1-13.	
P.A.G.,	,	Weinstein et al., LOUD: A 1020-Node Microphone Array and Acoustic Beamformer, 14th International Congress on Sound & Vibration, July 2007, 8 pgs.	
P.A.G.	/	Wung, A System Approach to Multi-Channel Acoustic Echo Cancellation and Residual Echo Suppression for Robust Hands-Free Teleconferencing, Georgia Institute of Technology, May 2015, 167 pgs.	
P.A.G.	/	Yamaha Corp., MRX7-D Signal Processor Product Specifications, 2016,12 pgs.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /P.A.G./

				C	Complete if Known		
				Application Number	Not Yet Assigned		
INF	ORMATION D	ISCLOSI	IRF	Filing Date	Herewith		
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	(Use as many sheets as necessary)			Examiner Name	Not Yet Assigned		
Sheet	20	of	20	Attorney Docket Number	15119.0002-01000		

	NONPATENT LITERATURE DOCUMENTS				
/P.A.G /	Yamaha Corp., PJP-100H IP Audio Conference System Owner's Manual, Sep. 2006, 59 pgs.				
P.A.G./	Yamaha Corp., PJP-EC200 Conference Echo Canceller, Oct. 2009,2 pgs.				
P.A.G./	Yan et al., Convex Optimization Based Time-Domain Broadband Beamforming with Sidelobe Control, Journal of the Acoustical Society of America, vol. 121, no. 1, Jan. 2007, pp. 46-49.				
P.A.G./	Yensen et al., Synthetic Stereo Acoustic Echo Cancellation Structure with Microphone Array Beamforming for VOIP Conferences, 2000 IEEE International Conference on Acoustics, Speech, and Signal Processing, Jun. 2000, pp. 817-820.				
P.A.G./	Zhang et al., Multichannel Acoustic Echo Cancellation in Multiparty Spatial Audio Conferencing with Constrained Kalman Filtering, 11th International Workshop on Acoustic Echo and Noise Control, Sep. 2008, 4 pgs.				
P.A.G./	Zhang et al., Selective Frequency Invariant Uniform Circular Broadband Beamformer, EURASIP Journal on Advances in Signal Processing, Vol. 2010, pp. 1-11.				
P.A.G./	Zheng et al., Experimental Evaluation of a Nested Microphone Array with Adaptive Noise Cancellers, IEEE Transactions on Instrumentation and Measurement, vol. 53, no. 3, Jun. 2004, pg. 777-786.				

Examiner / PAULA Allen GREENE/ Signature	(09/19/2019)	Date Considered	
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EAST Search History

EAST Search History (Prior Art)

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L12	1540	(D14/214).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 14:02
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L16	490	(D23/388).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 14:04
L17	1938	((D6/308) or (D6/300)).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 14:05
L18	787	((181/144) or (181/145) or (181/147)).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 14:06
L19	1037	((181/148) or (181/150) or (181/157)).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 14:06
L20	1336	((181/198) or (181/199) or (181/141)).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 14:08
L21	935	((181/164) or (181/172) or (181/173)).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 14:10

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_24 1000	(381/386).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 14:16
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26 546	H04R25/00.cpc.	USPAT	OR	OFF	2019/09/17 14:18
27 1455	H04R5/02.cpc.	USPAT	OR	OFF	2019/09/17
28 116	H04R1/20.cpc.	USPAT	OR	OFF	2019/09/17
29 1231	H04R9/06.cpc.	USPAT	OR	OFF	2019/09/17 14:20
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31 352	H04R7/18.cpc.	USPAT	OR	OFF	2019/09/17
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L129	1	("D787481").PN.	USPAT; USOCR	OR	OFF	2019/09/17 15:38
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L132	4826	((455/90.3) or (455/569.1) or (455/575.1)).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 16:00
L133	1430	(D14/223).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 16:23
L134	556	(D24/174).CCLS.	USPAT; USOCR	OR	OFF	2019/09/17 16:24
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,	11	151 of 171	S\$.	1	51	NI :

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S5	60	<u></u>	USPAT	OR	OFF	2019/09/17

e 1:1	9-cv-0)1343-RGA Document 150-2 Filed 0	4/06/20	Page 32	2 of 56 F	PageID #: 4
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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNElghereby certify that this Feels Transmitual is being deposited with the United LLP 901 NEW YORK AVENUE, NW WASHINGTION, DC 20001-4413 APPLICATION NO. DE LING DATE	CURRENT CORRESPOND	ENCE ADDRESS (Note: Use B	ock 1 for s	any change of address)		Fee(pape	s) Transmittal. rs. Each addit	This certifional paper	icate ca such a	annot be used for as an assignment	any	other accompanying
APPLICATION NO. FILING DATE FIRST NAMED INVENTOR ATTORNEY DOCKET NO. CONFIRMATION NO. 29700.875 08:06-2019 Elizabeth Ahra Cho 15119.0002-01000 5:96 TITLE OF INVENTION: ARRAY MICROPHONE ASSEMBLY APPLN. TYPE ENTITY STATUS ISSUE FEE DUE PUBLICATION FEE DUE PREV. FAID ISSUE FEE TOTAL FEES DUE DATE DUE nonprovisional UNDISCOUNTED 5:700 80.00 \$0.00 \$0.00 \$700 12/30/2019 EXAMINER ART UNIT CLASS-SUBCLASS GREEN, PAULA ALLEN 2912 D14-225000 I. Change of correspondence address or indication of Tee Address' (3) 12/30/2019 I. Change of correspondence address or indication of Tee Address' (3) 12/30/2019 I. Change of correspondence address or indication of Tee Address' (3) 12/30/2019 I. Change of correspondence address or indication of Tee Address' (3) 12/30/2019 I. Change of correspondence address or indication of Tee Address' (3) 12/30/2019 I. Change of correspondence address or indication from PTO' SB1/2; a tracked. I. Change of correspondence address or indication from PTO' SB1/2; a tracked. I. Change of correspondence address or indication from PTO' SB1/2; a tracked. I. Change of correspondence address or indication from PTO' SB1/2; a tracked. I. Change of correspondence address or indication from PTO' SB1/2; a tracked. I. Change of correspondence address or indication from PTO' SB1/2; a tracked. I. Change of correspondence address or indication from PTO' SB1/2; a tracked. I. Change of correspondence address or indication from PTO' SB1/2; a tracked. I. Change of correspondence address or indication from PTO' SB1/2; a tracked. I. Change in PTO/SB1/2; a tracked. I. Change in Retrify Status (from status indicated below, no assigned data will appear on the patient. I. I. I. an assigned is identified below, the document must have been previously periodicly belief for recordation. A set forth in 37 CFR 3.11 and 33 CFR 3.8(a). Completion of this form is NOTA 3 substitute for filling an assignment. I. A. NAME OF ASSIGNEE Shure Acquisition Holdings, Inc I. Please check the appropriate assignee category or	FINNEGAN, F LLP	HENDERSON, FA		OW, GARRI		addr	essed to the M	at this Fee(s ce with suf Iail Stop IS	s) Trans ficient SUE F	smittal is being o postage for first EE address above	depo class e, or	sited with the United s mail in an envelope being transmitted to
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APPLICATION NO. FILING DATE FIRST NAMED ENVENTOR ATTORNEY DOCKET NO. CONFIRMATION NO. 29/700.875 08/06/2019 Elizabeth Ahra Cho 15119.0002-01000 5596 TITLE OF INVENTION: ARRAY MICROPHONE ASSEMBLY APPLN TYPE ENTITY STATUS ISSUE FEE DUE PUBLICATION FEE DUE PREV. PAID ISSUE FEE TOTAL FEE(S) DUE DATE DUE adoptivisional UNDISCOUNTED \$700 \$0.00 \$700 \$12/30/2019 EXAMINER ART UNIT CLASS-SUBCLASS GREEKE, PAULA ALLEN 2912 D14-225000 1. Change of correspondence address or indication of "Fee Address" (37) CFR 1.503). Change of correspondence address of indication of "Tee Address" (37) CFR 1.503). Change of correspondence address of indication form PTO/S14/7; Rev 0.3-00 or more received statehole. See of a Customer Number is required. ASSIGNEE AND FOR SINGER DATA TO BE PRINTED ON THE PATENT (print or type) PLEASE NOTE: Unless an assignee is identified below, no assigneed stat will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filled for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment. (A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY) Shure Acquisition Holdings, In. Niles, IL Please check the appropriate assignee category or categories (will not be printed on the patent): Individual 20 Corporation or other private group entity I government 4a. Fees submitted: Also use Fee Publication Fee (if required) Advance Order + # of Copies 4b. Method of Payment: (Please first renaply) any pervinanty paid for hown above) The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 96-0916 NOTE: Absent a valid certification of loss of entitlement to small or micro entity status. Seeking this bow will be take to be a notification of loss of entitlement to small or micro entity status. NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.59 and 1.50 and 1.50 and 1												(Signature)
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4b. Method of Payment: (Please first reapply any previously paid fee shown above) Belectronic Payment via EFS-Web Enclosed check Non-electronic payment by credit card (Attach form PTO-2038) The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 06-0916 Change in Entity Status (from status indicated above) Applicant certifying micro entity status. See 37 CFR 1.29 Applicant asserting small entity status. See 37 CFR 1.27 Applicant changing to regular undiscounted fee status. NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.	Please check the appropr	iate assignee category or	categor	ries (will not be pr	inted on the patent):	ln	dividual 🔀 C	orporation o	or other	private group en	itity	Government
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The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 06-0916 Change in Entity Status (from status indicated above) Applicant certifying micro entity status. See 37 CFR 1.29 Applicant asserting small entity status. See 37 CFR 1.27 Applicant changing to regular undiscounted fee status. NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.	4b. Method of Payment:	(Please first reapply any	previou	usty paid fee show	n above)							
5. Change in Entity Status (from status indicated above) Applicant certifying micro entity status. See 37 CFR 1.29 Applicant asserting small entity status. See 37 CFR 1.27 Applicant changing to regular undiscounted fee status. NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.	28 Electronic Paymer	nt via EFS-Web	Enclose	ed check 🔲 N	Non-electronic paymer	nt by	credit card (A	ttach form I	PTO-20	038)		
Applicant certifying micro entity status. See 37 CFR 1.29 Applicant asserting small entity status. See 37 CFR 1.27 Applicant changing to regular undiscounted fee status. NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status. NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.	The Director is he	reby authorized to charg	e the rec	quired fee(s), any o	deficiency, or credit at	ny ov	erpayment to l	Deposit Acc	ount N	o. 06-0916		
Applicant certifying micro entity status. See 37 CFR 1.29 Applicant asserting small entity status. See 37 CFR 1.27 Applicant changing to regular undiscounted fee status. NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status. NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.							***************************************			***************************************		
Applicant certifying micro entity status. See 37 CFR 1.29 Applicant asserting small entity status. See 37 CFR 1.27 Applicant changing to regular undiscounted fee status. NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.	5. Change in Entity Sta	tus (from status indicate	ed above	2)	NOTE AL.	. ,			C	c pro-	co e	15.4 1.1570
Applicant asserting smart entity status. See 37 CFR 1.27 to be a notification of loss of entitlement to micro entity status. NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable. NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.	Applicant certifyir	ig micro entity status. Se	e 37 CF	R 1.29	fee payment in the m	nicro	entity amount	will not be	accepte	d at the risk of a	pplic	cation abandonment.
Applicant changing to regular undiscounted fee status. NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable. NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.	Applicant asserting	g small entity status. See	37 CFF	R 1.27	to be a notification of	floss	of entitlemen	t to micro e	ntity st	atus.		
NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.	Applicant changin	g to regular undiscounte	d fee sta	itus.	NOTE: Checking thi	s box	will be taken	to be a noti	fication	of loss of entitle	emer	nt to small or micro
······································	NOTE: This form must b	e signed in accordance v	vith 37 (CFR 1.31 and 1.33	********	****	************	ents and cer	tificatio	ons.		*************
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Typed or printed name

Elizabeth D. Ferrill

58,415

Registration No.

Electronic Patent Application Fee Transmittal									
Application Number:	297	700875							
Filing Date:	06-	Aug-2019							
Title of Invention:	ARRAY MICROPHONE ASSEMBLY								
First Named Inventor/Applicant Name:	Eliz	zabeth Ahra Cho							
Filer:	Elizabeth Diane Ferrill/Charlene Woods								
Attorney Docket Number:	15	119.0002-01000							
Filed as Large Entity									
Filing Fees for Design									
Description		Fee Code	Quantity	Amount	Sub-Total in USD(\$)				
Basic Filing:									
Pages:									
Claims:									
Miscellaneous-Filing:									
Petition:									
Patent-Appeals-and-Interference:									
Post-Allowance-and-Post-Issuance:									
DESIGN ISSUE FEE		1502	1	700	700				

Case 1:19-cv-01343-RGA Document 150 Description	Fee Code	20 Page Quantity	45 of 56 Page Amount	HD #: 4981 Sub-Total in USD(\$)	
Extension-of-Time:					
Miscellaneous:					
Total in USD (\$) 700					

	1 50-2 Filed 04/06/20 Page 46 of 56 PageID #: 4982 Acknowledgement Receipt
EFS ID:	37337714
Application Number:	29700875
International Application Number:	
Confirmation Number:	5596
Title of Invention:	ARRAY MICROPHONE ASSEMBLY
First Named Inventor/Applicant Name:	Elizabeth Ahra Cho
Customer Number:	22852
Filer:	Elizabeth Diane Ferrill/Charlene Woods
Filer Authorized By:	Elizabeth Diane Ferrill
Attorney Docket Number:	15119.0002-01000
Receipt Date:	01-OCT-2019
Filing Date:	06-AUG-2019
Time Stamp:	18:23:48
Application Type:	Design
Payment information:	
Submitted with Payment	yes
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Payment Type	CARD
Payment was successfully received in RAM	\$700
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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

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				Complete if Known					
				Application Number	Not Yet Assigned				
INF	ORMATION D	ISCLOSE	IRF	Filing Date	Herewith				
				First Named Inventor	Elizabeth Ahra CHO				
SIAI	STATEMENT BY APPLICANT (2)			Art Unit	Not Yet Assigned				
	(Use as many sheets as necessary)		Examiner Name	Not Yet Assigned					
Sheet	2	of	3	Attorney Docket Number	15119.0002-01000				

	U.S. PATENTS									
/P.A.G	./	US-7565949	07-28-2009	Tojo, Makoto						
/P.A.G	./	US-8064629	11-22-2011	Jiang, Peigen						
P.A.G		US-8670581	03-11-2014	Harman						
		US-D255234	06-03-1980	Wellward et al.						
P.A.G	7	US-D256015	07-22-1980	Doherty, Glenn F.						
P.A.G	7	US-D329239	09-08-1992	Hahn, Richard						
P.A.G	1	US-D340718	10-26-1993	Leger et al.						
P.A.G	0.0	US-D345346	03-22-1994	Alfonso et al.						
P.A.G.	1	US-D345379	03-22-1994	Chan, Robert J.						
P.A.G	1	US-D363045	10-10-1995	Phillips et al.						
P.A.G	./	US-D392977	03-31-1998	Kim, Byung Hwa						
/P.A.G	./	US-D394061	05-05-1998	Fink, David						
P.A.G	./	US-D424538	05-09-2000	Hayashi et al.						
P.A.G	/	US-D432518	10-24-2000	Muto, Keiko						
P.A.G	1	US-D453016	01-22-2002	Nevill et al.						
P.A.G		US-D489707	05-11-2004	Kobayashi, Tomohiko						
P.A.G	./	US-D504889 5/2005	12-19-2014	Andre et al.						
A.G	100	US-D526643	08-15-2006	Ishizaki, Hideaki						
P.A.G	/	US-D527372	08-29-2006	Allen, Graham David						
βΡ.A.G	./	US-D542543	05-15-2007	Bruce, David						
/P.A.G		US-D546318	07-10-2007	Yoon et al.						
P.A.G	./	US-D547748	07-31-2007	Tsuge, Takahiro						
P.A.G.	1	US-D549673	08-28-2007	Niitsu, Takuya						
P.A.G.	1	US-D552570	10-09-2007	Niitsu, Takuya						
/P.A.G		US-D599553 9/2009	9 01 15 2008	Mischel, dr. Shapiro						
P.A.G	I .	US-D566685	04-15-2008	Koller et al.						
/P.A.G	./	US-D587709	03-03-2009	Niitsu et al.						
/P.A.G	./	US-D589605	03-31-2009	Reedy et al.						
/P.A.G	./	US-D595736	07-07-2009	Son et al.						
/P.A.G	./	US-D613338	04-06-2010	Marukos, Chris						
P.A.G.	1	US-D614871	05-04-2010	Tang et al.						
P.A.G	1	US-D636188	04-19-2011	Kim et al.						
/P.A.G		US-D642385	08-02-2011	Lee et al.						
/P.A.G	./	US-D685346	07-02-2013	Szymanski et al.						
P.A.G.	/	US-D717272	11-11-2014	Kim et al.						
/P.A.G	./	US-D725631	03-31-2015	McNamara, Greg						

Case 1:19-cv-01343-RGA Document 150-2 Filed 04/06 UNITED STATES PATENT AND TRADEMARK OFFICE Filed 04/06/20

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
29/700,875	11/05/2019	D865723	15119.0002-01000	5596

22852 7590 10/16/2019

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Extension or Adjustment under 35 U.S.C. 154 (b)

Design patents have a term measured from the issue date of the patent and the term remains the same length regardless of the time that the application for the design patent was pending. Since the above-identified application is an application for a design patent, the patent is not eligible for Patent Term Extension or Adjustment under 35 U.S.C. 154(b).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Elizabeth Ahra Cho, Wilmette, IL; Shure Acquisition Holdings, Inc, Niles, IL Gregory William Lantz, Aurora, IL; John Matthew Miller, Grayslake, IL;

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IR103 (Rev. 10/09) 170 of 171

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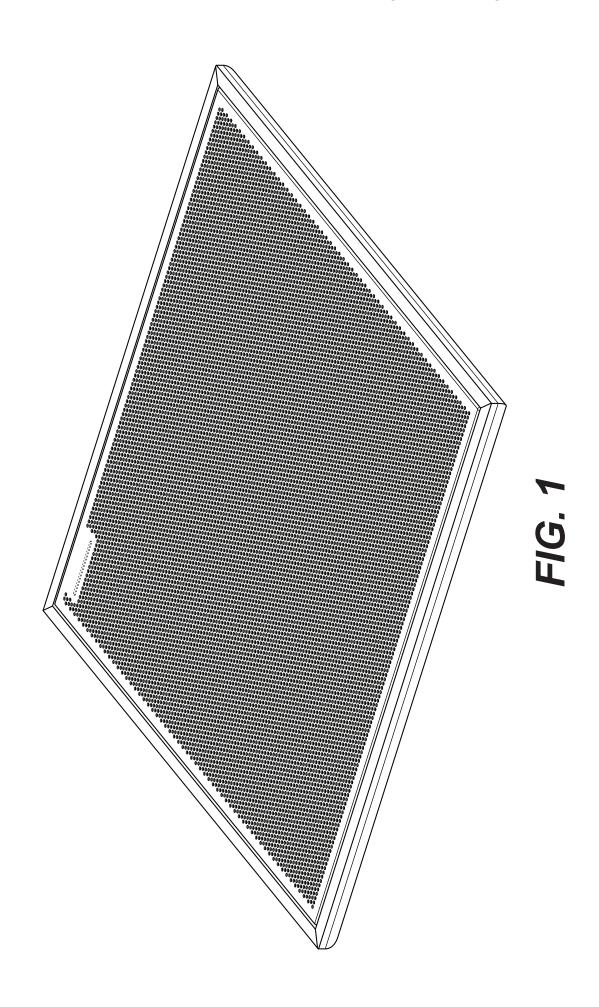
Patent Grant with Color/Grayscale Drawings

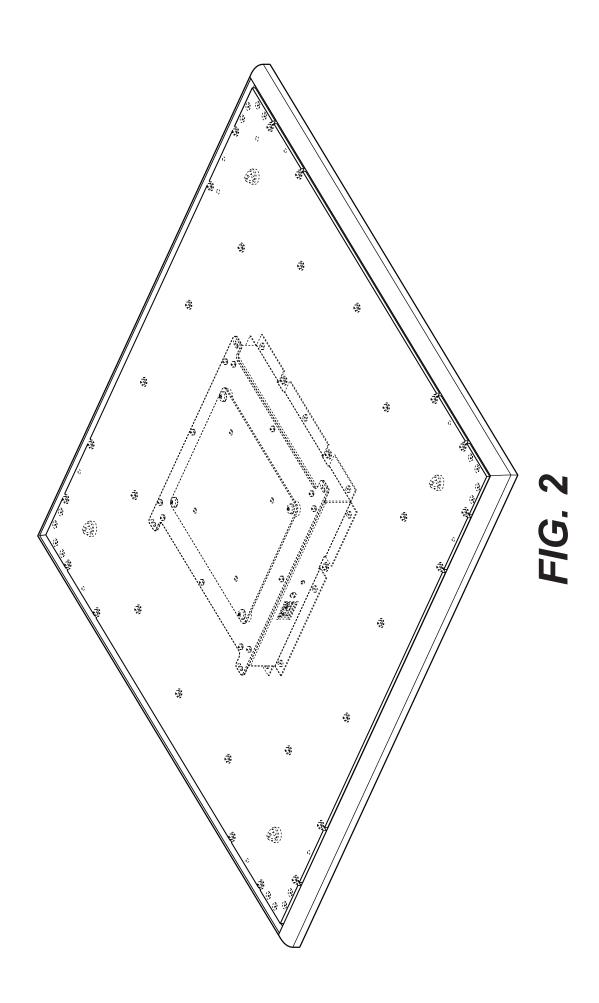
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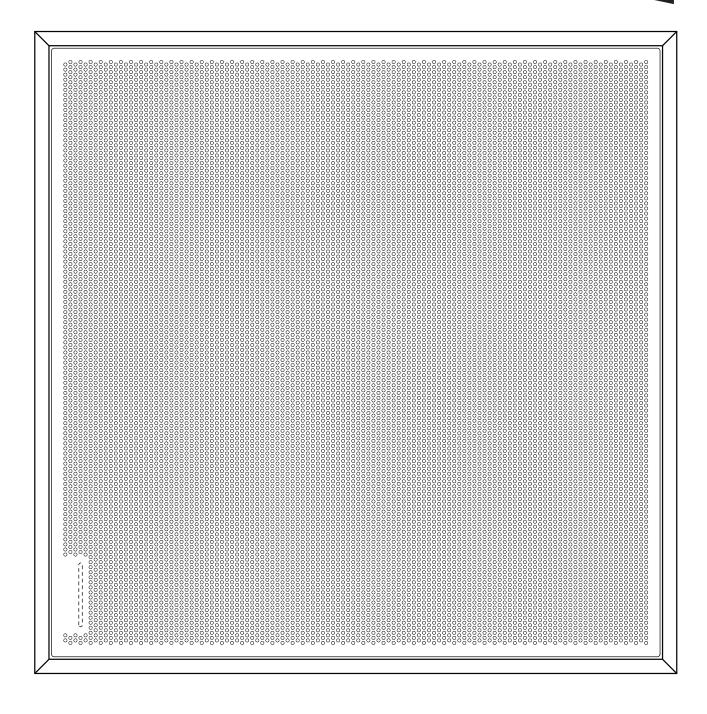
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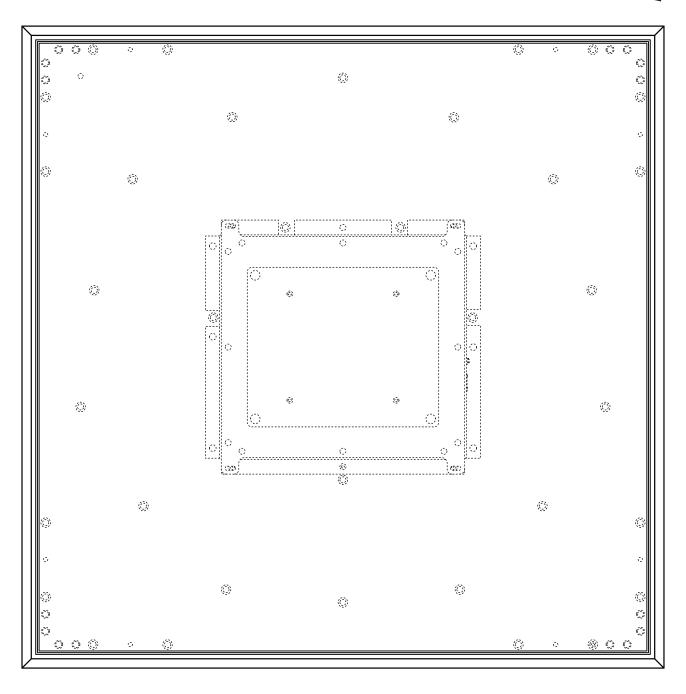




FIG. 5

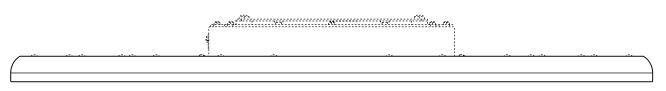


FIG. 6